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A New Pycnodont Fish from the Upper Cretaceous of Rooks County, Kansas

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ABSTRACT: A new Pycnodont fish, *Pycnomicrodon kansascensis*, *gen. et sp. nov.* is described from the Upper Cretaceous of Kansas. The type is based on the anterior part of the skull, a few scales posterior to the opercular region, and prevomer with teeth.

THE remains of Pycnodont fish have rarely been found in the Cretaceous of Kansas. Williston (Kan. Univ. Quart. IX, No. 2, 1900, pp. 28-29) reported a fragment of the left lower jaw containing two rows of teeth of *Coelodus brownii* Cope and a fragment of the right lower jaw of *Coelodus stantoni* Williston from the Kiowa shales of Kansas. Cragin (Colorado College Studies, V, 1894) described *Macromesodon abrasus* (Cragin) based on isolated teeth taken from his "No. 3 of the Belvidere section," of the Kiowa shale, Lower Cretaceous.

Not until 1939 were the remains of Pycnodont fish discovered in the Upper Cretaceous of Kansas. Hibbard (Univ. Kan. Sci. Bull., Vol. 26, No. 9, 1939) described *Coelodus streckeri* from Russell county, Kansas, based on a prevomer with teeth. In the summer of the same year the junior author collected the remains of a Pycnodont fish from an exposure of Niobrara chalk one mile west of Webster, Rooks county, Kansas. The following report is based on this specimen.

We are indebted to Dr. H. H. Lane, curator of museums, for much helpful criticism and advice.

Pynomicrodon gen. nov.

Genotype. *Pynomicrodon kansasensis* sp. nov., No. 1019F, Kansas University, Museum of Vertebrate Paleontology. Prevomer plate complete with parasphenoid; anterior part of skull with roofing bones; and associated anterior scales.

Diagnosis. The characters of the genus are those of the type species.

Pynomicrodon kansasensis sp. nov.

(Plate 1, figs. 1-4)

Holotype. No. 1019F, Kansas University, Museum of Vertebrate Paleontology. Prevomer plate complete with parasphenoid; anterior part of skull with roofing bones; and associated anterior scales. Collected by Allen Graffham, June, 1939.

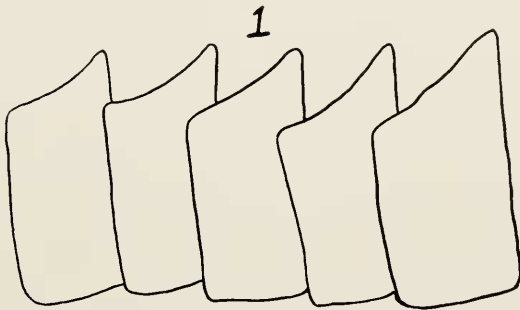
Horizon and type locality. Niobrara, Upper Cretaceous, 1 mile west of Webster, Rooks county (locality No. 2), Kansas. Found approximately eight feet above base of a thirty-foot chalk exposure.

Diagnosis. A pycnodont fish possessing smooth, rhombic scales posterior to the opercular region, membrane bones ornamented with fine round granulations ending in a blunt point; prevomer small, not notched posteriorly as in *Coelodus*; five rows of teeth present on the prevomer; the transverse width of the prevomer teeth greater than the anteroposterior diameter; the smooth prevomer teeth of the median row set close together and not widely spaced.

Description of holotype. Scales imbricated and smooth, in region posterior to opercular. These scales measure in length 15.8 mm., and in width 8.6 mm. Anterior part of skull present, bearing dermethmoid and frontals. Sutures are plain under granulated dermal covering. The small prevomer bears five rows of smooth uncrenulated acrodont teeth. The prevomer is flat and not convex as in *Coelodus streckeri* from the Upper Cretaceous of Russell county, Kansas. The prevomerine dentition presents a slight convexity, owing to the greater height of the crowns of the median row of teeth. The median row of teeth is longer than the lateral rows. The greatest width of the prevomerine dental series is 14 mm. The median row of teeth, seven in number, measures 17.7 mm. in length. In the posterior part of the row the first five teeth are ellipsoid, the sixth and seventh are nearly round. The crowns of the teeth bear no apical depressions, are not crenulated near the base and are entirely smooth except the most anterior tooth of the row, which bears seven rounded minute elevations in the enamel of the crown. The measurements

of the teeth of the median row are taken from the posterior to the anterior; first posterior tooth, transverse width 3.3 mm., anteroposterior diameter 2 mm.; second tooth, transverse width 4.3 mm., anteroposterior diameter 2.5 mm.; third tooth, transverse width 4.2 mm., anteroposterior diameter 2.5 mm.; fourth tooth, transverse width 3.9 mm., anteroposterior diameter 2.6 mm.; fifth tooth, transverse width 3.3 mm., anteroposterior diameter 2.3 mm.; sixth tooth, transverse width 2.6 mm., anteroposterior diameter 2.4 mm.; seventh tooth, transverse width 2.5 mm., anteroposterior diameter 2.05 mm.

The right internal lateral row of teeth, seven in number, is shorter than the median row, measuring 16.4 mm. The teeth are more rounded than the ellipsoidal teeth of the median row. The first pos-



TEXT FIG. 1. *Pycnomicrodon kansasensis* Hibbard and Graffham, drawing of scales posterior to the opercular region, No. 1019F, $\times 1$ approx.

terior tooth is opposite the second posterior tooth of the median row. The second tooth is larger than the first and rests directly against it. It has a greater anteroposterior diameter than the third posterior tooth of the median row, but is opposite to it. The third tooth is smaller than the first, more rounded and alternates with the third and fourth tooth of the median row. The fourth tooth has a greater transverse width than the third, but a shorter anteroposterior diameter, being more ellipsoidal in outline. It alternates with the fourth and fifth tooth of the median row. The fifth tooth is ellipsoidal in outline, but smaller than the fourth. It alternates with the fifth and sixth tooth of the median row, but is closer to the fifth than the sixth tooth of this row. The sixth tooth is nearly round and smaller than the fifth. It is opposite the sixth tooth of the median row. The seventh tooth is the smallest of the series and opposite the larger seventh tooth of the median row. Also, present on its crown are a few minute elevations.

The left internal lateral row with eight teeth in number, shorter than the median row, but longer than the right internal lateral row, measures 16.7 mm. in length. In shape the teeth correspond with those of the left internal lateral row. The first posterior tooth is alternate with the first and second of the median row, though closer to the first than the second. Its base is more posterior than the corresponding tooth of the opposite row. The second tooth is opposite the second posterior tooth of the median row. The tooth is crowded out of the tooth row due to the increase in number of teeth in this row. In position it is the third tooth of the left internal lateral row and the first posterior tooth in the left outer lateral row. The third tooth is alternate with the second and third teeth of the median row. The fourth, fifth, sixth, and seventh teeth are also alternate with those of the median row. Note that the sixth tooth of the right internal lateral row which corresponds to the seventh of the left internal lateral row is opposite the sixth tooth of the median row. The eighth tooth is opposite the seventh tooth of the median row. It is the smallest tooth in the dental series and bears a few minute elevations on its crown.

The right outer lateral row begins alternate with the first and second tooth of the right internal lateral row and extends forward so that the most anterior tooth of the row alternates with the sixth and seventh of the right internal lateral row. The row consisted of seven teeth; the two most anterior are missing. The remaining five teeth measure 9.5 mm. in length. The teeth are normal except the second posterior, which is strongly ellipsoidal. This tooth is opposite the well-developed second posterior tooth of the right internal lateral row, which probably influenced its development.

The left outer lateral row consists of six teeth measuring 10.5 mm. Posteriorly it begins opposite the third tooth of both the left internal row and the median row. The anterior tooth of this row terminates opposite the sixth tooth of the median row or alternate between the sixth and seventh of the left internal lateral row.

All teeth are normal except the fifth, which is considerably smaller than the rest of the teeth in this row. It approaches in size the most anterior or the eighth tooth of the left internal row.

The prevomer has been crushed out of position and lies in front of the skull. Firmly attached to the prevomer is the parasphenoid. It extends posteriorly 29.7 mm. from the last tooth in the median row. There is no evidence that the parasphenoid is attached to the prevomer as in *Coelodus*, a conclusion based on the study of the

prevomer in *C. streckeri*, for in this latter form a concavity is present at the posterior base of the prevomer, into which the parasphenoid apparently fits.

The anterior roofing bones of the skull are covered by a layer of ganoin, bearing numerous conical granulations ending in blunt points. There are no pits on the covering of the bones except where the granulations have been broken. These granulations are hollow at the base. The circular base is a ring of enamel. The removal of the ganoin covering reveals the suture between the frontals and dermethmoid (see fig. 1). The portion of the crushed frontals gives the following measurements: left 25 mm. in length, width at midline, 12 mm.; right 23.7 mm. in length, width at midline, 14 mm. The suture separating the anterior part of the frontals from the dermethmoid is very irregular. Nasals and premaxillaries are lacking. The left orbital ring seems to be represented in part.

Discussion. *Pycnomicrodon kansasensis* is distinguished from other known genera of the family *Pycnodontidae*, by its smooth rhomboidal scales and five rows of small, smooth, noncrenulated, closely set prevomerine teeth.

It is impossible to compare it with genera based wholly upon splenial dentition, though in no case is there a splenial dentition known to be small enough to be associated with this form.

PLATE I

FIG. 1. *Pycnomicrodon kansasensis* Hibbard and Graffham, type, anterior part of skull with dermal covering removed showing suture between frontals and dermethmoid, No. 1019F, $\times 1\frac{3}{17}$.

FIG. 2. *Pycnomicrodon kansasensis*, anterior part of skull with prevomer, No. 1019F, $\times 1\frac{3}{17}$.

FIG. 3. *Pycnomicrodon kansasensis*, prevomer with dental series, No. 1019F, $\times 3\frac{1}{17}$.

FIG. 4. *Pycnomicrodon kansasensis*, opercular region, No. 1019F, $\times \frac{1}{2}$.

PLATE I

